higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
NQF LEVEL 3
(Second paper)

15 November 2023

This marking guideline consists of 9 pages.

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/graph/drawing/document/map
F	Choosing correct formula
SF	Substitute into formula
R/J	Reasoning/Justification
P	Penalty – no units, incorrect rounding off
R	Rounding off
E	Explanation
U	Unit
MF	Manipulation of formula

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QUESTION 1

Question		Solution		Explanation
1.1	1.1.1	Northeast (NE) ✓		1 A Answer (1)
	1.1.2	2 (Two) ✓		1 A Answer (1)
	1.1.3	1 (One) ✓		1 A Answer (1)
	1.1.4	= 24✓× 0,3048✓ = 7,32 m✓ (*Full marks for answer only*)		2 M Method 1 A Answer (3)
	1.1.5	Scale in mm 1m = 1 000mm while 10m = 10 000mm Scale = 1 000✓mm : 10 000✓mm Scale = 1 : 10✓		 2 M Method 1 A Answer (3)
	1.1.6	Actual length = 35✓÷ 10✓ Actual length = 3,5m✓		2 M Method 1 A Answer (3)
1.2	1.2.1	$BC^2 = 4{,}5^2 + 3^2$✓ BC = 5,41 m✓ P = 2 × 8 m✓ + 4,5m✓ + 3 m✓ + 5,41 = 28,91 m✓		2 SF sub 1 A Answer 2 M method 1A Answer (6)
	1.2.2	Area of rectangle = length × breadth Area = 8 × 4,5✓ Area = 36 m^2✓ Area of triangle = $\frac{1}{2} \times 3 \times 4{,}5$ ✓ = 6,75 m^2 Total area = 36 m^2 + 6,75 m^2✓ = 42,75 m^2✓		 1 SF sub 1 A Answer 1 SF sub 1M addition 1 A Answer (5)

Question		Solution			Explanation
	1.2.3	(a)	= 600 ÷ 1 000 = 0,6 m		1 A Answer (1)
		(b)	Area ABDE = 36 m^2✓ Area (Tile) = $0,6^2$✓ Area (Tile) = 0,36 m^2✓ Number of tiles = 36 m^2 ÷ 0,36 m^2✓ Number of tiles = 100 tiles✓ Number of tiles = 100 × 1,04✓ Number of tiles = 104✓		1 A Answer 1 M Method 1 A Answer 1 M Method 1 A Answer 1 M Method 1 A Answer (7)
	1.2.4	(a)	d = 10 ÷ 100 = 0,1✓m h = 15 ÷ 100 = 0,15✓m		1 A Answer 1 A Answer (2)
		(b)	Area BCD = 6,75 m^2 <u>Paint in ℓ required:</u> ℓ = 6,75 m^2 ÷ 3 m^2✓ ℓ = 2,25✓ <u>The amount of paint in ℓ in a can:</u> Volume = 3,14×$0,05^2$× 0,15✓ Volume = 0,0011775 m^3 Paint = 0,0011775 × 1000 ℓ✓ Paint = 1,18 ℓ✓ <u>Number of cans required:</u> = 2,25 ÷ 1,18✓ = 1,91 = 2✓ ∴2 cans of paint a required	Area BCD = 6,75×10000 cm^2 Area BCD = 67500 cm^2✓ <u>Paint in ℓ required:</u> ℓ = 67500 cm^2 ÷ 30000 cm^2✓ ℓ = 2,25✓ <u>The amount of paint in ℓ in a can:</u> Volume = 3,14 × 5^2 × 15✓ Volume = 1177,5 cm^3 Paint =1177,5 mℓ = 1,18 mℓ ✓ <u>Number of cans required:</u> = 2,25 ÷ 1,18✓ = 1,91 = 2✓ ∴2 cans of paint a required		 1 M Method 1 A Answer 1 SF 1 M Method 1 A Answer 1 M Method 1 A Answer (7)

QUESTION 2

Question		Solution		Explanation
2.1	2.1.1	R7 000✓		1 RT (1)
	2.1.2	R2 000✓		1 RT (1)
	2.1.3	A = R6 000 + 2(R1 000)✓ A = R8 000✓ B = 2 × R2 000✓ A = R4 000✓		1 M Method 1 A Answer 1 M Method 1 A Answer (4)
	2.1.4	The point at which total expenses and total income are equal✓		1 A Answer (1)
	2.1.5	6 (Six)✓ installations		1 RT (1)
	2.1.6	(a) Income= R2 000✓× No. of installations✓		2 A Answer (2)
		(b) Expenses = R6 000✓+ (R1 000✓× No. of installations✓)		3 A Answer (3)
	2.1.7	(a) Income = R2 000× 35✓ Income = R70 000✓		1 SF 1 A Answer (2)
		(b) Expenses = R6 000+ (R1 000× 35)✓ Expenses = R41 000✓ Profit = 70 000 – 41 000✓ Profit = R29 000✓		1 SF 1 A Answer 1 M Method 1 A Answer (4)

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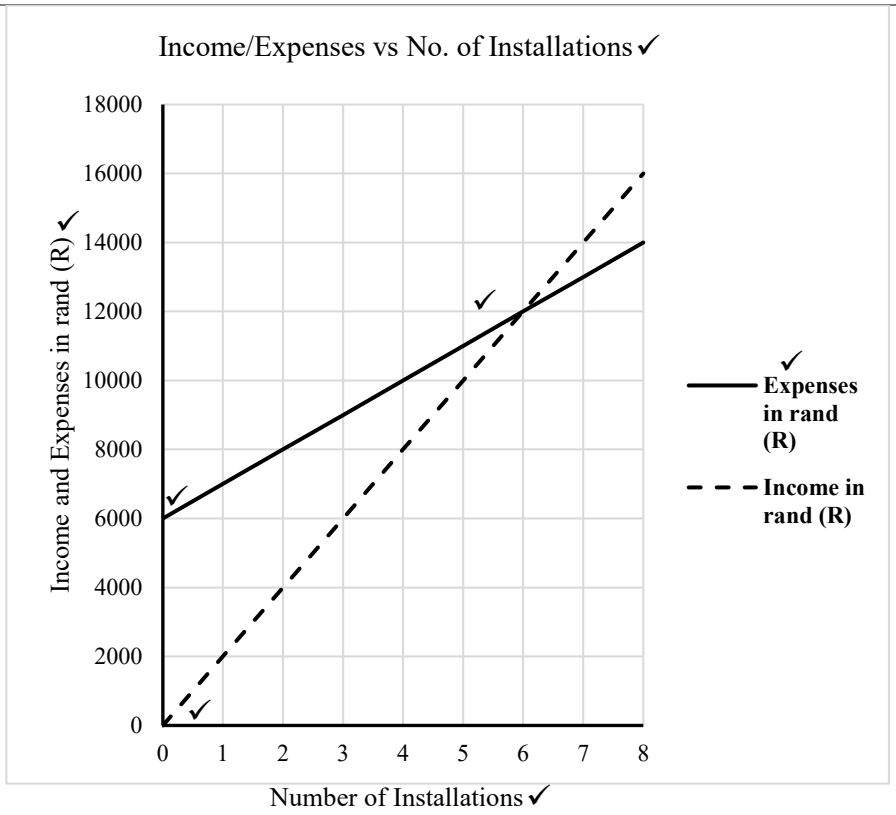
Question		Solution		Explanation
	2.1.8			1 Title 1 Legend 2 Axis 2 Start point 1 Break Even (7)

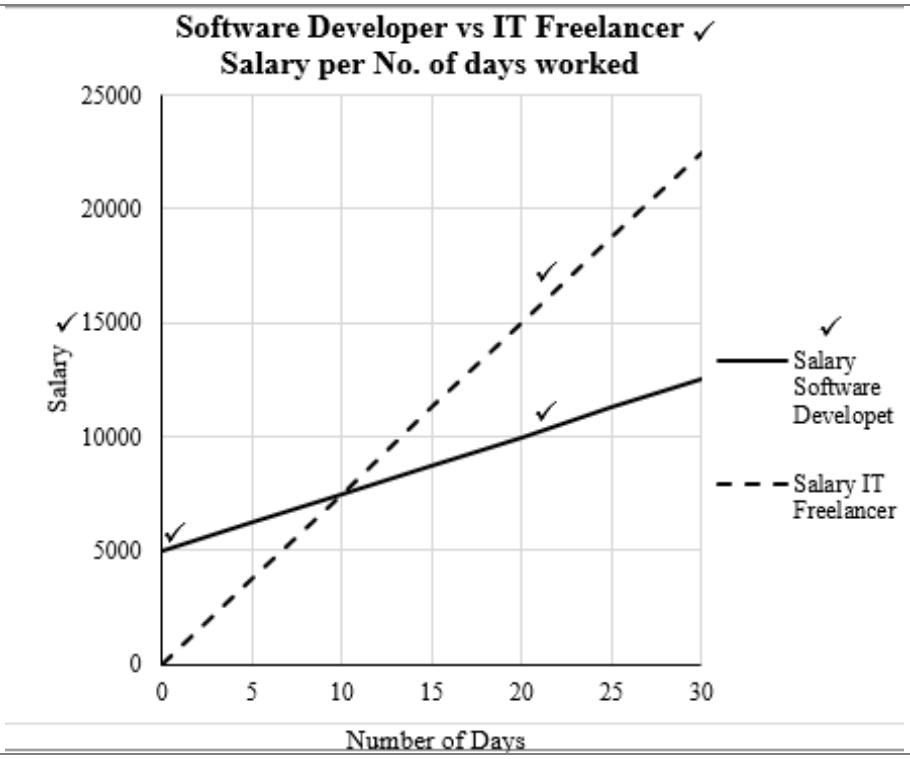
Question		Solution		Explanation
2.2	2.2.1	4,56 + [(5 600 ÷ 100) × 1,35] ✓ = R4,56 + R75,60✓ = R80,16✓		1M 1MA Addition 1A (3)
	2.2.2	Bank A = R26 +[(16 000 ÷ 100) × R1,40] ✓ = R26 + R224 = R250✓ Bank B = R30 +[(16 000 ÷ 100) × R1,80] ✓ = R30 + R288 = R318✓ Difference = R318 – R250 Difference = R68,00 ✓		1M 1 A 1M 1A 1A (5)

Question		Solution		Explanation
	2.2.3	= R7,80 + [(400 ÷ 100) × R1,80✓ = R7,80 + R7,20✓ = R15,00✓ A		1M 1MA addition 1A (3)
	2.2.4	Bank A✓ is much cheaper compared to Bank B when you withdraw money but when you deposit both banks are more expensive when depositing cash at the branch compared to ATMs.✓✓ (Any relevant answer)		3A (3)
				[40]

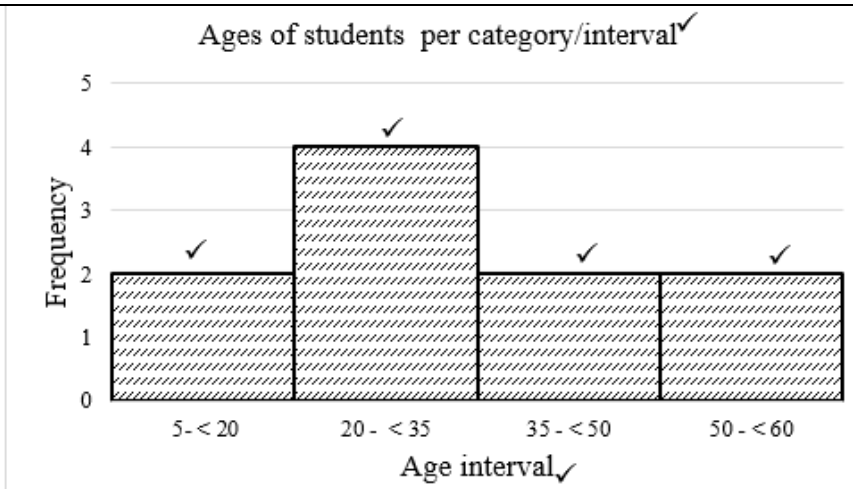
QUESTION 3

Question		Solution		Explanation
3.1	3.1.1	Direct proportion,✓ because when the *x* values increases the *y* values also increases.✓		1A 1R/J (2)
	3.1.2	R80,00✓✓		2A (2)
	3.1.3	R200,00✓✓		2RG (2)
3.2	3.2.1	Income = 750✓N✓		2A (2)
	3.2.2			2RG (2)

Number of days worked	0	5	10	15	20
Software Developer Salary (R)	5000	6250	**7500**✓	**8750**✓	**1000**✓
IT Freelancer Salary (R)	0	3750	**7500**✓	**11250**✓	**15000**✓

Question		Solution		Explanation
	3.2.3			1 Title 1 Legend 2 Correct line graph 1 Correct Start Point 2 for axes (7)
	3.2.4	IT Freelancer position✓- The salary is much higher for 10 and more days of working for both positions✓✓ OR Software Developer✓ - The salary is much higher for less than 10 days of working for both positions✓✓		1 A 2 R/J (2)
3.3	3.3.1	Income = R200✓ N✓		2 A (2)
	3.3.2	Cost = R5 000✓ + (50✓ N✓)		3 A (3)
	3.3.3	Income = R200×50 = 10 000✓ Cost = R5 000 + R50(50)✓ Cost = R7 500✓ Profit = income – cost = R10 000✓– R7 500 = R2 500✓ Yes✓		1 A income 1 M cost 1 A cost 2 M difference 1A (6)
				[35]

QUESTION 4

Question		Solution	Explanation
4.1	4.1.1	<table><tr><th>AGE INTERVAL</th><th>TALLY</th><th>FREQUENCY</th></tr><tr><td>< 20</td><td>| |</td><td>2</td></tr><tr><td>20 – < 35</td><td>| | | |✓</td><td>4✓</td></tr><tr><td>35 – < 50</td><td>| |</td><td>2</td></tr><tr><td>50 – < 60</td><td>| | ✓</td><td>2✓</td></tr><tr><td>**TOTAL**</td><td></td><td>**10**✓</td></tr></table>	4A 1A total amount (5)
	4.1.2		1A Title 4 correct bars 1 correct values on *x* axis ***Give 4 marks for bar graph*** (6)
	4.1.3	Mean = $\frac{47 + 48 + 56 + 63 + 65 + 70 + 72 + 82 + 88 + 91✓}{10✓}$ = $\frac{682}{10}$ ✓ = 68,2✓	2 M 1 MA 1 A (4)
	4.1.4	18 19 22 27 33 35 40 44 55 60✓ Median = $\frac{33 + 35}{2}$✓ = 34✓	1M order 1M divide 1A (3)

Question		Solution		Explanation
4.2	4.2.1	20%✓		1A (1)
	4.2.2	Steers $= 100\% - 20\% - 33\%$✓ $= 47\%$✓		2M Subtraction 1A (3)
	4.2.3	KFC $= 80$✓ $\times$ 20%✓ $= 16$✓		2M 1A (3)
	4.2.4	P(KFC) $= \frac{16}{80}$✓ $= 0,2$✓ $= 20\%$✓		1M divide 1A 1A as % (3)
	4.2.5	P(Nando's or Steers) $= \frac{26+38}{80}$✓ $= \frac{64}{80}$ $= \frac{4}{5}$✓ $= 0,8$✓ or 80%	P(Nando's or Steers) = 100%✓ - 20%✓ = 80% = 0,8✓	2M divide 1A (3)
	4.2.6	Number of students = 80 + 20 = 100✓ Nando's = 26 + 10 = 36✓ P(Nando's) = $\frac{36}{100}$ = 36%✓✓		2M addition 1A 1U (4)
				[35]

TOTAL: 150

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